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ABSTRACT

A case study examining the general effects of automating operations in a medium sized academic library on both the staff and the organization over a ten year period reveals that the major impact has been the reappraisal of functional objectives and their accomplishment. In regard to personnel, there has been an overall savings in labor costs, and, while it has decreased professional staff requirements, it has increased support staff positions, many of which require greater skill, experience, and training. Major organizational effects have been recognized through the creation of two new units--systems development and operations--which have had a centralizing impact upon the library. The implications of these findings for other libraries are discussed. (RAA)

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The Impact of Automation on the Staff and Organization of a Medium-Sized Academic Library: A Case Study

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The past decade has been a turbulent one for academic libraries that have introduced new technological developments. By the late 1970's many libraries have lived with the changes brought by automation and now have sufficient experience to assess its long-term impact on personnel and organizational patterns. This paper presents observations from a study of ten years of automation in a medium-sized academic library. The case study examines the general effects of automating operations on professional and support staff and on the organization itself during the period from 1968 to 1978, and considers the implications of these effects for other libraries.

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INTRODUCTION

One of the major issues in libraries, and certainly among the most sensitive, is the impact of automation on staff and organization. Libraries are relative latecomers in accepting automated data processing and its applications. Unlike business and industry, which have been involved for many years with the use of data processing and are long familiar with its results,[1] automation in libraries is fairly recent. The impact of mechanization on library personnel and on the structure of the organization has received little attention.

BACKGROUND: AUTOMATION IN THE LIBRARY

Indiana State University Library was among the first in the State and the region to develop automated data processing systems.[2] Its early initiatives in mechanizing library operations, which began in 1964 with the creation of keypunch transaction cards for acquisitions, gained momentum four years later with the decision to form a systems development staff. Early in 1968 a new professional position was established, data processing specialist, and filled with an applicant from the university computer center. With a background in large computer systems, this individual later acquired a library degree. The eventual success of the library's systems undoubtedly is due to the fact that someone with training and experience in both areas was found, an uncommon occurrence in the early days of library automation. The following year a support position was transferred from the acquisitions department and a data processing assistant was assigned to assist the specialist, at first on a part-time basis, later full-time. By 1969 the library's automated allocation control system was designed, documentation and programs

written, and the system tested. The following year a systems development unit was established as a separate entity within technical services. This unit, composed of the data processing specialist and the assistant, was further strengthened in 1972 with the addition of a data control clerk, from a position formerly in acquisitions.

The development of an internal systems unit with a staff capable of writing programs while at the same time responsible for maintaining daily control over systems was one of several premises on which the entire automation effort rested. Although relations with the university computer center were cordial at the beginning, to remain totally dependent upon unqualified cooperation seemed unwise. Therefore, a mutually agreeable set of guidelines detailing the continuing responsibilities of the library and the center was developed, an approach which undoubtedly avoided many of the difficulties encountered by other libraries. The computer center, like many elsewhere, was beset with changes in equipment, personnel turnover, and budgetary support. The agreement lessened uncertainty about the direction of computer services and ensured consideration of the library's plans.

A second premise involved the decision early in 1969 to adopt a total systems approach in automating library functions, a method termed by one library administrator as "the evolutionary approach."[3] The library was to move from its traditional manual operations to automated machine procedures in successive and gradual stages. This decision was the result of extensive background reading, field trips to libraries with automated applications, conclusions based on an analysis and documentation of present library procedures, projection of future developments in the library,

probable budgetary levels, and expected support from the computer center. Implementation of the automated circulation system was to coincide with the completion of a new library building, approximately two years in the future. This amount of time allowed the circulation system and several others to be developed in an efficient and logical manner, avoiding hasty implementation involving considerable risk.

The introduction of machine-readable cataloging (MARC) tapes on a subscription basis in 1969 facilitated the development of automation in the library. By 1971, the tapes were generating current awareness notices for faculty book selection and requests for purchase, and were used as a basis for cataloging data. The use of MARC significantly accelerated materials processing and allowed reductions in the large accumulation of new acquisitions.

Implementation of the automated circulation system ran four to six months behind schedule, largely because considerable staff time was expended on systems in place, as well as on the testing and refinement of new developments. Tentatively scheduled for September, 1970, the system was delayed because the machine-readable identification card needed to operate it was at first not approved by the university. By August, 1974, the identification card had been accepted and the circulation system was in operation.

The next major step, and one that was to alter significantly the nature and direction of automation in the library, was affiliation with the Ohio College Library Center (now OCLC, Inc.). In October, 1975, two Beehive 100 terminals were installed and connected to OCLC. One terminal was furnished by the Indiana Cooperative Library Services Authority (INCOLSA)

for the library's participation in developing the Indiana Bibliographic Data Base; a second was purchased from new library equipment funds. Because OCLC was moving to new quarters, the library operated in a training state from October through the middle of January, 1976. During this period, INCOLSA conducted training sessions for staff members directly involved in terminal operations. Regular card production, as well as peripheral operations, began early in February.

Concurrent with the installation of OCLC terminals, a staff of five card preparation assistants, a processing assistant and a card unit supervisor, were transferred from the cataloging department to form a separate data processing unit (DPU), under the direction of the data processing specialist. The decision to transfer this larger clerical pool, which had been processing catalog cards manually, from cataloging to data processing was made because the nature of their work was changing. The entire staff remained with the new unit, undergoing a retraining process composed of individual instruction and self-study. By the end of fiscal year 1977, between 650 and 700 titles a month were being processed directly by the DPU. Activity the next year was more dramatic, with nearly 1700 titles a month processed, approximately thirty-five percent of the total production of the library. Another one-third of library production was accomplished in the DPU with minimum checking by professional catalogers. The remaining one-third of the titles required moderate to extensive revision and original cataloging.

IMPACT ON LIBRARY PERSONNEL

In 1968, at the beginning of the ten-year period, the library employed twenty-nine professional librarians. A data processing specialist

was added the following year, and in 1969-70, two assistant catalog librarians and an assistant serials librarian. The next two years brought no changes as university enrollment peaked at over 13,500. Three more new professional positions were added in 1972-73, two reference positions and an assistant science librarian. There was no change the following year. In 1974-75, after a substantial drop in enrollment, an assistant serials position was eliminated and the following year three more resignations were left unfilled: a music-fine arts librarian, a combination bibliographer and assistant reference librarian, and the head of the serials division. Finally, in 1977-78, an assistant catalog librarian position was omitted and a second cataloging position transferred and filled with an orientation librarian. Before the end of the fiscal year, the library was searching for a professional to direct the data processing unit, a position created as a result of a vacancy in the acquisitions department. By the end of the ten-year period, the library faculty numbered thirty-one, two more than at the beginning of the decade.

Although it is difficult to establish a direct relationship between automation and the reduction or transfer of positions since the connection often is not well-defined, automated operations were in part, if not entirely, responsible for the net reduction of two professional positions in acquisitions, two in serials, and two in cataloging. The loss of two cataloging positions (three were eventually transferred and one added during the period) can be attributed largely to a reduced need for staff due to OCLC, the other reductions to increased rationalization of other technical services processes through reorganization prompted by automation.

The number of clerical and other staff positions increased during the decade from thirty-two to forty-five. No positions were eliminated during the period. The major organizational change, already noted, involved the transfer of seven positions to data processing from cataloging in 1976 when OCLC service began. Automation also effected the transfer of two positions to data processing. Initially designated as data processing assistant and data control clerk, these positions were later upgraded because of increased responsibilities, to assistant library system analyst and data control technician, respectively. During the decade the cataloging department gained four new positions, three cataloging assistants and a processing assistant; two of the four new positions were among the seven transferred in 1976 to the DPU. Acquisitions, after gaining one bibliographic searcher in 1970, lost two searchers in 1977-78, one to the data processing unit and another to serials.

One major consequence of automation was the creation of a relatively large number of support staff positions demanding more specialized training or experience. This, in turn, necessitated revisions in existing personnel policies. A university staff reclassification, fortuitously underway as the library was installing OCLC terminals, allowed the upgrading of positions in data processing. Positions previously defined as Typist Clerk I and II, calling for general office skills, were redefined and made more specialized. Renamed Library Technician I and II, employees in these groups were expected to do terminal keying of data for the library's automated systems. Individuals with experience in operating keypunch and key-to-tape devices, in addition to some knowledge of Anglo-American cataloging rules, were sought. Whereas the Library

Technician II positions required a working knowledge of the library's automated systems and were expected in most cases to be filled from the ranks of Library Technician I through internal promotion, extensive training was to serve as a substitute for experience in the lower classification.

As a result of reclassification, qualifications and pay for staff in data processing were raised to more satisfactory levels and library technicians at the higher grade were equated with keypunch operators in the university computer center. An attempt to raise lower grade technicians to pay levels above those of other clerical positions in technical services was unsuccessful since the university would not allow unequal levels without a library-wide reclassification. A potential area of staff friction—higher compensation for one group over another--was therefore avoided, although not without cost. Since the demand for individuals with experience and knowledge in the data processing sector is generally high, certainly higher than for most clerical staff, it has been difficult to find and retain individuals with the necessary qualifications. Training for data processing positions in the library requires a minimum of three months, with six months usually necessary before employees are cleared for full processing on terminals. The turnover rate in the lower paid technician category has been very high, with employees remaining on the average only four to six months. As a result, the supervisor and staff are in a continuous training cycle, which frustrates the desire for optimum use of automated equipment and procedures.

IMPACT ON ORGANIZATIONAL STRUCTURE

The library is organized into two basic divisions, public services and technical services, a bifurcated functional plan that has become the most prevalent type of structure in large libraries.[4] The two divisions are further separated into six departments, and a number of smaller units, the latter usually directly under departments, although in several cases autonomous. The major departments include acquisitions, cataloging, circulation and reference.

The application of automated data processing to the library's processes had only a small effect on its overall organizational pattern. Although it cannot be said that the extent of automation was limited by conventional departmental boundaries, because of their nature many technical services procedures were more amenable to automation than operations in other departments. The cumulative impact on technical services processes has been significant. Four systems were eventually developed in this area to replace manual operations: (1) an Allocation Control system, (2) a MARC Current Awareness Notice system, (3) a MARC Copy Search system, and, (4) a Books-in-Process system.

Since the new systems largely involved a modification of existing procedures rather than the adoption of entirely new ones, these systems only slowly began to alter organizational patterns within technical services. Pronounced differences did not occur until the introduction of OCLC computerized cataloging. With the advent of OCLC the inability of the traditional organization to respond to new operational conditions and greater complexity was accentuated. Departments were too large and amorphous to efficiently accomplish their diverse activities. Many similar functions were performed by generalists and there was little

specialization. Automated procedures could not work efficiently without a more formal rationalization of technical services. Reorganization brought about the consolidation of similar functions into specialized units with both responsibility and authority. In order to minimize staff disruption while introducing desirable change, reorganization had to proceed gradually over an extended period.

Although the decision to adopt a total systems approach resulted in the introduction of numerous changes in procedures and the flow of work in the areas of acquisitions, cataloging and circulation, the concept of an integrated system was not completely realized, largely because of economic and hardware limitations. The relationship of those departments whose structure was affected most by automation to other departments remained, in most instances, unchanged.

CONCLUSION

There is little question that the automation of library operations in its several forms has decidedly affected staff and organizational patterns in the library. Perhaps the major impact of automation is the opportunity it afforded for a reappraisal of the objectives of various functions and the way they were performed. Traditional methods and patterns were examined and questioned, and more rational and efficient procedures developed. Undoubtedly many of the economies and other benefits accompanying the introduction of automation could have been accomplished if the same evaluation had been applied to existing manual operations and equipment. The decision to automate, however, made possible the consideration of a number of major long-term modifications and was an appropriate time to introduce additional change into the organization.

In regard to personnel, automation has introduced distinct and lasting changes. Although the ultimate effect of automation on staff is subject to controversy, it is clear that positions were both eliminated and created. There are more jobs requiring greater skill, experience and training, and fewer demanding the repetition of routine tasks. OCLC, for example, obviated the need for additional professional staff that would have been necessary using manual procedures. At the same time, however, it created a demand in the library for more support personnel with knowledge of both cataloging rules and techniques and data processing. Although unit costs since OCLC have gone up slightly, the rise has been less than the rate of inflation. The new system has permitted an increase in cataloging production and is sufficiently flexible to accomodate future expansion and changing needs. The overall effect of automation has been a savings in labor costs in the library, a finding that contrasts with opinions expressed recently by one administrator.[5]

The impact of automation on professional and support staff, however, has differed. There is lesser need for librarians in those areas most directly touched by automation, acquisitions, cataloging and serials. One of the obvious, and not unexpected, results has been a reduction in the need for professional catalogers and certain other specialties in technical services. Although the library budget does not benefit directly from savings in labor costs, since these are borne by the university, reductions in one area allow reassignment to other functions—one cataloging position has gone to orientation and another to administration, while an acquisitions position was released for a professional to head the preparations unit. Three other technical

service positions, at first frozen due to a university reduction, later were eliminated. All of these reductions were accomplished through attrition. Clearly, librarians have been shifted gradually yet steadily from the acquisition and processing of materials toward efforts more closely related to assisting users.

Trends in support staff positions are less clear. No support positions were lost during the ten-year period. In reality, seven new positions were added in technical services, three in acquisitions and four in cataloging. Three of the new positions, one from acquisitions and two from cataloging, were eventually absorbed by the operations unit. Among support staff, as with professionals, work of a routine, repetitive nature was assimilated by automation, while a relatively large number of more specialized positions at a higher grade were created. Despite the fact that support positions associated with centralized cataloging became more challenging and demanding, the inability to upgrade adequately these positions led to rapid turnover and morale problems, an experience substantiated by the findings of others.[6] Throughout the entire decade the transfer of support positions occurred much more frequently than those for professionals. This undoubtedly was due to the fact that the former generally experienced greater turnover but also because support positions were more flexible and in larger number than professional positions.

One of the major organizational effects of automation was the creation of two new units, systems development and operations (formerly the data processing unit). The first unit, which began with one individual under the director of technical services, has evolved into a

small permanent group of specialists responsible for maintaining and improving the library's automated program and systems, and has been placed directly under the dean of the library. The relatively autonomous nature of the systems unit is a natural development of the total system concept since the changes introduced by automation affect to some degree the entire library. The establishment of the systems unit and its protege, operations, has led to the reduction of traditional fixed departmental boundaries within technical services, one of the intentionally sought results of automation. This, in turn, has resulted in a change in the decision-making structure of the library. The effect of changes now must be taken into account to a larger degree than before automation. Decisions have become more complex and involve greater risk. Organizational decisions that previously were decided at the departmental level increasingly have become the responsibility of the top administrative level of the library. As a result, the planning process is more important, with each decision requiring thorough preparation and deliveration. The impact overall of automation on the organization has been positive. A certain amount of flexibility and local control has been relinquished, but the gain in quality of the larger decision and planning processes ultimately yields greater benefits for the library.

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